(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 December 2001 (27.12.2001)

PCT

(10) International Publication Number
WO 01/97597 A1

(51) International Patent Classification[7]: A01G 23/099

(21) International Application Number: PCT/PL00/00053

(22) International Filing Date: 3 August 2000 (03.08.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P.340863 19 June 2000 (19.06.2000) PL

(71) Applicants and
(72) Inventors: **KAWALEC, Maria** [PL/PL]; ul. Marszałkowska 56/1, PL-00-545 Warszawa (PL). **KAWALEC, Andrzej** [PL/PL]; ul. Korfantego 44, PL-01-496 Warszawa (PL).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **KOSILO, Tomasz** [PL/PL]; ul. Hirszfelda 8/9, PL-02-776 Warszawa (PL).

(74) Agent: **PADEE, Grazyna**; ul. Noakowskiego 18/20, PL-00-668 Warszawa (PL).

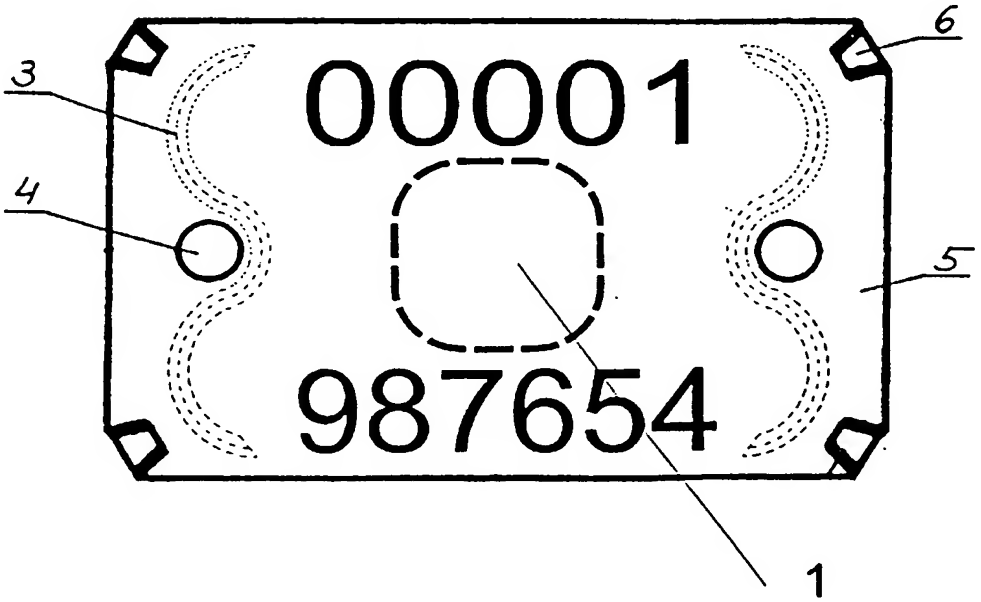
(81) Designated States *(national)*: AT, BG, BR, BY, CA, CH, CZ, DE, DK, EE, ES, FI, HR, HU, ID, IL, LT, LU, MK, NO, PT, RO, RU, SE, SI, SK, TR, UA, US, YU, ZA.

(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

**Published:**
— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: MARKING ELEMENT FOR STAMPING WOOD




(57) Abstract: A marking element for stamping wood comprising a plate (5) provided with catches (3, 6) and with encoded information to be automatically read by a portable reader device (2), characterised in that the element contains inside it a RFID type transponder enabling data writing and reading.

WO 01/97597 A1

# Marking element for stamping wood

The invention relates to a marking element for marking and identification of timber material, such as tree trunks, timber, logs, pallets, etc.

Numerous methods for marking wood are long known, the Signumat method among others. The method is based on marking individual pieces of wood with plates made of plastics, wood or metal. The plates are permanently attached to the wood. The plates are provided with graphic, letter and/or digital signs to identify an object the plate is attached to. Generally the plates are marked with the consecutive number of the gained wood and the encoded sign indicating a source of the material. The marking system is aimed at the wood legality control, as well as improving timber distribution.

The plates used in the known methods must be produced of materials resistant to the weather conditions. Special catches provided with the profiled locking endings secure reliable attachment of the plates. The catches are of a different shape depending on the end use. To mark the front surface of a trunk, a plate with catches in a form of a wave are recommended, whereas for the side surface plates with four pins are used. The other side of plates is provided with corner catches to fasten the plate to

a hammer or another fastening device used to drive plates into the timber material. The most popular plates and fastening devices are produced by Latschbacher, Fluegel and Equip Bois.

Marking plates with various catch shapes have been disclosed in the following patents and patent applications: AT 396410B, EP 0460256A1, PL P-314955, as well as in Polish application for design No 105185. According to the design the plate for marking trees is rectangular. In the vicinity of the shorter edges the plate is provided with the two symmetrically placed corrugated catches in a perpendicular relation to the plate. There are two holes through the plate between the shorter edges of the plate and the corrugated catches. The front of the plate is provided with the corner projections in a form of small poles.

Known marking elements are provided at the front side thereof with a signature as a combination of letters and/or digits. The signature may also have a form of a bar-code. Such embodiment is disclosed in European Patent EP 0248928, wherein the information provided on the element attached to the timber material may be decoded automatically by a portable reader device. According to the above-mentioned description the information can be encoded as a bar-code marked as signs marking off with colour, or in a form of cavities, indents, embossments and protrusions in the plate material, or as a magnetic code carrier placed on or inserted into the plate, such as a magnetic plate, strip, foil or powder. The encoding of information has made it possible to extend the scope of information placed on the plate and to enhance its readout process. The solution provided by EP 0248928 enables, however, to read the write-once information only. Thus, this is a system of unidirectional communication. There is no possibility to supplement the information or to change any part of the

record. Hence, this is the way to encode the information concerning unchanging characteristics of timber (assortment, grade, size), but not the information on the place and period of storage, transport and consignee of the wood. The information can be read from a small distance only. The serious problem is a little resistance of a bar-code to the soil, that is important when using marking elements in the outside, where they are constantly under an influence of frequently aggressive environmental factors. A soiled bar-code may be impossible to read.

There are known some remote identification devices, that make use of radio frequencies RFID (Radio Frequency Identification), based on magnetic or electromagnetic coupling. They contain an unique encoded sequence (binary series) to identify the considered object. The information is encoded in an element called a transponder, and is read by a special reader.

The wood marking element of the invention, comprising a plate provided with catches and with encoded information to be automatically read by a portable reader device, is characterised by containing inside the element a RFID type transponder enabling data writing and reading. The transponder comprises at least one integrated circuit and an antenna to enable communication. The transponder may be inserted, set or impressed into the marking element.

A proper reader is used to write and read from the transponder. The reader generates high frequency magnetic field to exchange information between the reader and the transponder. The magnetic field of the reader provides also energy to power electronic circuits of the transponder, thus the marking element with the transponder need not be supplied with a battery. Digital data transmission is based on a magnetic field modulation.

The method of the invention allows to extend the useful characteristics of marking elements attached to the timber material. The spectrum of information deposited on the marking element may now be much wider. One may write down not only the data on the kind of wood, trunk parameters, and place of origin, but also on a destination, consignee, time and route of transport, and many others. It is very important that for the first time there is a possibility not only to read a permanently written information, but also to supplement and change it. The information placed in the transponder is fully resistant to soil and varying weather conditions. Depending on the construction of a reader it is possible to read and write data from a distance of several centimetres up to about 1 m. It is possible to transmit data through the obstacles to remotely identify objects and remotely write and modify data. The above-named advantages are of great importance in the circumstances of wood hewing, storing, handling and processing, frequently in an unfavourable weather conditions and in a hardly accessible places. The data in the element of the invention are very well secured against an unauthorised reading and modification; it can by encoded and invisible. This advantage according to the invention facilitates discovering of illegal hewing, stealing and processing of wood and preventing the same.

The transponder placed in the marking element of the invention needs not to be maintained or serviced and activates (switches on) on detecting the magnetic field of the reader.

The marking element of the invention may be additionally provided with information in a form of known digital and/or letter writing.

The marking element of the invention is shown in one embodiment on the drawings, wherein Fig. 1 illustrates the element in a view from a side

containing the information, and Fig. 2 illustrates a cross-section of the element and the reader, but at the same time the invention is not limited to this embodiment.

The marking element of the invention comprises the rectangular plate 5 with the information in a form of digits marked on it. The front side of the plate 5 is provided with corner catches 6 to reliably place the plate on a hammer for driving the plate into the timber material. The other side of the plate is provided with corrugated catches 3 placed on the shorter edges of the plate to attach the plate to the timber material. Between the corrugated catches and shorter edges of the plate there are two round holes 4. The transponder RFID 1 is heat pressed into the plate between the corrugated catches. The data from the transponder 5 are read and modified by a reader 2.

According to the invention, the transponder 5 may be placed on any marking element regardless of the construction thereof.

# CLAIMS

1. A marking element for stamping wood comprising a plate provided with catches and with encoded information to be automatically read by a portable reader device, characterised in that the element contains inside it a RFID type transponder enabling data writing and reading.
2. The element according to claim 1, characterised in that the transponder comprises at least one integrated circuit and an antenna to enable communication.
3. The element according to claim 1, characterised in that the transponder is inserted, set or impressed into the marking element.

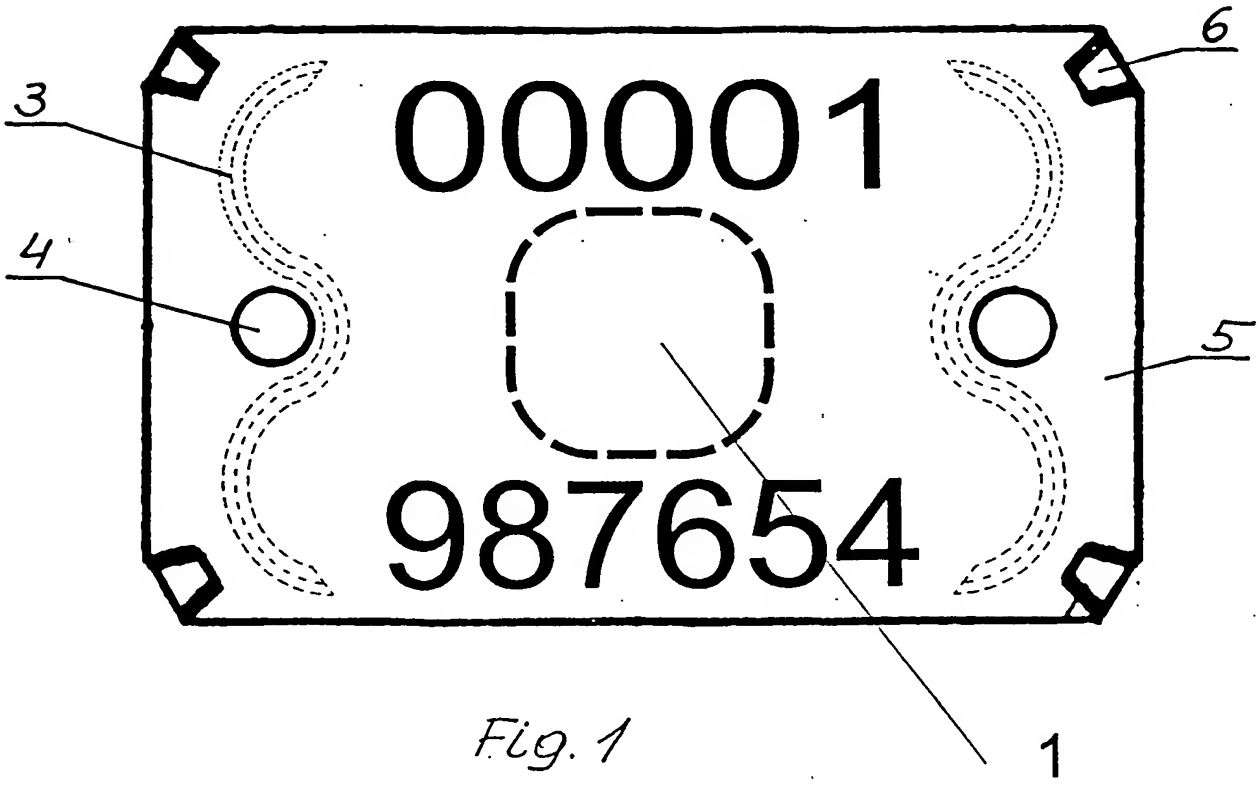



Fig. 1

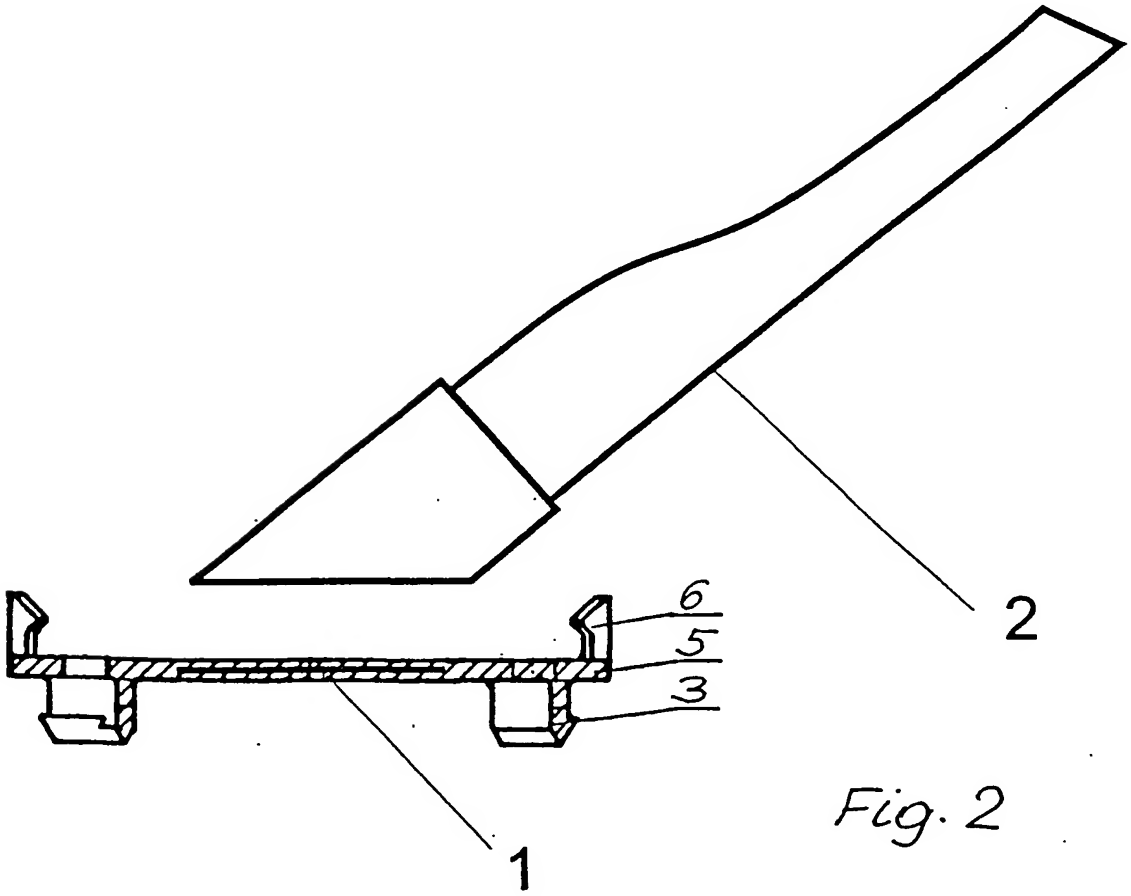



Fig. 2

# INTERNATIONAL SEARCH REPORT

Int ›nal Application No
PCT/PL 00/00053

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A01G23/099

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A01G A01K G06K G09F

*Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched*

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | FR 2 763 164 A (LEUVREY EDWIGE KARINE LAURENCE) 13 November 1998 (1998-11-13) the whole document | 1,3 |
| A | --- | 2 |
| Y | EP 0 248 928 A (LATSCHBACHER KAJETAN) 16 December 1987 (1987-12-16) cited in the application the whole document | 1-3 |
| | --- | |
| Y | EP 0 535 919 A (RYAN MICHAEL C) 7 April 1993 (1993-04-07) column 2, line 35 -column 6, line 43; figures | 1-3 |
| | --- | |
| | -/-- | |

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 21 March 2001 | 28/03/2001 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Merckx, A |

Form PCT/ISA/210 (second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Int onal Application No
PCT/PL 00/00053

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | DE 198 07 284 A (JURISCH ;PEITSCH (DE); SEMMLER (DE)) 9 September 1999 (1999-09-09) the whole document | 1-3 |
| A | GB 2 294 846 A (KERBY ROBERT ANTHONY) 8 May 1996 (1996-05-08) claims 1,11; figures | 1,3 |
| A | GB 2 075 464 A (LATSCHBACHER KAJETAN) 18 November 1981 (1981-11-18) | |
| A | WO 96 32706 A (LATSCHBACHER KLAUS) 17 October 1996 (1996-10-17) & PL 314 955 A 20 January 1997 (1997-01-20) cited in the application | |

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int ional Application No
PCT/PL 00/00053

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| FR 2763164 A | 13-11-1998 | NONE | |
| EP 0248928 A | 16-12-1987 | DK 456286 A<br>GR 862479 A<br>YU 173686 A | 11-12-1987<br>26-01-1987<br>28-01-1991 |
| EP 0535919 A | 07-04-1993 | CA 2079517 A | 02-04-1993 |
| DE 19807284 A | 09-09-1999 | DE 19912806 A | 21-09-2000 |
| GB 2294846 A | 08-05-1996 | NONE | |
| GB 2075464 A | 18-11-1981 | NONE | |
| WO 9632706 A | 17-10-1996 | PL 314955 A | 20-01-1997 |